R E P O R T R E S U M E S

ED 003 101 08

EVALUATION OF THE EFFECTIVENESS OF USING SPECIALIZED INSTRUCTORS IN PROVIDING OCCUPATIONAL TRAINING FOR INDUSTRIAL JOBS FOR HIGH SCHOOL VOCATIONAL AGRICULTURE STUDENTS.

BY- ROBERTS, ROY W. AND OTHERS
ARKANSAS UNIVERSITY, FAYETTEVILLE

REPORT NUMBER ERD-075-65 PUB DATE 65
MAGNET COVE HIGH SCHOOL, MALVERN, ARK.
REPORT NUMBER BR-5-0013
CONTRACT OEC-5-85-016
EDRS PRICE MF-$0.18 HC-$2.60 65P.

DESCRIPTORS- *VOCATIONAL EDUCATION, *OCCUPATIONAL GUIDANCE, *AGRICULTURE, SPECIALISTS, SECONDARY SCHOOL STUDENTS, RURAL SCHOOLS, *PROGRAM EVALUATION, *DEMONSTRATION PROJECTS, DROPOUT PREVENTION, INDUSTRIAL EDUCATION, MALVERN, ARKANSAS, FAYETTEVILLE

AN EVALUATION WAS MADE OF THE USE OF SPECIAL INSTRUCTORS TO SUPPLEMENT DAY-SCHOOL INSTRUCTION IN VOCATIONAL AGRICULTURE. TRAINING IN THE SPECIALIZED AREAS OF ARC WELDING AND BLUEPRINT INTERPRETATION WAS GIVEN FOR A 6-WEEK PERIOD BY SPECIAL INSTRUCTORS TO 10 MALE STUDENTS IN THE 12TH GRADE. CLASS DISCUSSIONS, READING ASSIGNMENTS, WRITTEN AND ORAL TESTS, LABORATORY PRACTICE, AND THREE FIELD TRIPS WERE INCLUDED IN THE PROGRAM. SPECIAL CONSULTANTS, COMPETENCY TESTS, INTERVIEWS WITH THE STUDENTS AND THEIR EMPLOYERS, AND EVALUATIONS OF THE PROJECT BY THE STUDENTS WERE THE MEASURING INSTRUMENTS USED FOR EVALUATION OF THE PROGRAM. STUDENTS ENROLLED IN THE SPECIAL COURSE WERE FOUND TO BE ABLE TO MAKE OCCUPATIONAL CHOICES. FOLLOWUP STUDIES WILL BE NECESSARY TO DETERMINE THE STABILITY IN EMPLOYMENT OF THE STUDENTS. THE EXTENSION OF THIS PROGRAM INTO DAY-SCHOOL CLASSES IS SUGGESTED. (RS)

ED003101

EVALUATION OF THE EFFECTIVENESS OF USING SPECIALIZED INSTRUCTORS IN PROVIDING OCCUPATIONAL TRAINING FOR INDUSTRIAL JOBS FOR HIGH SCHOOL VOCATIONAL AGRICULTURE STUDENTS

By
Roy W. Roberts
Professor Emeritus of Vocational Education
University of Arkansas

Vocational and Technical Education
Contract Number OE 5-85-016
Vocational Education Act of 1963, Section 4 (C)

Glenn Teeter, Vocational Agriculture Instructor
Magnet Cove High School, Principal Investigator

The Magnet Cove Public Schools
Lee Cassady, Superintendent
RFD 5, Malvern, Arkansas

The Project Reported Herein Was Supported with
A Contract From the U. S. Department of
Health, Education, and Welfare,
Office of Education

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education
This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated do not necessarily represent official Office of Education position or policy.

FOREWORD

Many students who complete courses in vocational agriculture in the public schools cannot find employment in farming and must seek work in other occupations. A number of these students find it difficult to decide on an alternate choice of an occupation. Some of them become discouraged and dissatisfied and drop out of high school before graduation. They enter the labor market without adequate preparation and find it difficult to make satisfactory progress. Other students complete high school courses and take the first job that comes to hand with little knowledge of what the job consists of and little skill in the job requirements. These choices result in dissatisfaction and unsatisfactory progress.

Some recent changes have been made in vocational agriculture curriculums to meet the needs of students who desire to enter agriculturally related occupations or occupations in which the skills acquired in agricultural mechanics may be used to an advantage. Some teachers of vocational agriculture find it difficult to teach these required skills in a satisfactory manner because they had not previously acquired the competences needed, and they now do not have the time to become proficient in them. These teachers need some assistance in teaching these specialized skills.

This demonstration project was designed to evaluate the effectiveness of using special instructors for day-school classes in agricultural mechanics as a means of supplementing the instruction provided by the teacher of vocational agriculture. The project sought to determine the feasibility of using special instructors who were employed in industries in the school community and who were teaching the skills they used in employment to day-school students. It was thought that such a procedure could be utilized in many schools throughout the state.

This study was conducted by Glenn Teeter, teacher of vocational agriculture, Magnet Cove High School, and administered by Lee Cassady, superintendent of schools. This project report was written by Roy W. Roberts, professor emeritus of vocational education, University of Arkansas, who also served as a consultant to the project. The demonstration project was supported by a contract with the U. S. Department of Health, Education, and Welfare, Office of Education, under the provisions of the Vocational Education Act of 1963. The Vocational Division, Arkansas State Department of Education, joined the Magnet Cove School Board in requesting the contract.

J. Marion Adams

J. Marion Adams, Assistant
Commissioner for Vocational
Education, Arkansas State
Department of Education

Lee Cassady

Lee Cassady, Superintendent
Magnet Cove Public Schools

EVALUATION OF THE EFFECTIVENESS OF USING SPECIALIZED INSTRUCTORS IN PROVIDING OCCUPATIONAL TRAINING FOR INDUSTRIAL JOBS FOR HIGH SCHOOL VOCATIONAL AGRICULTURE STUDENTS

ABSTRACT

This project was designed to demonstrate the effectiveness of using special instructors to supplement the day-school instruction in agricultural mechanics for nine high school seniors enrolled in Vocational Agriculture IV at the Magnet Cove, Arkansas, High School. The study was designed to answer the following questions: (1) whether or not offering training of this nature would help students to make firm choices of a vocation, (2) whether or not such training would increase the stability of their employment, (3) whether or not the length of the apprenticeship period would be reduced as a result of the training, and (4) whether or not the training would reduce school dropouts.

The Magnet Cove community is an igneous area in Hot Spring County, Arkansas, containing a variety of minerals and unusually fertile soil. Agriculture was the principal industry prior to World War II, but mining and manufacturing have largely replaced agriculture in recent years. The community is rural and most of the inhabitants are part-time farmers and employees of local industries. The personnel officers of the industries have indicated that they have experienced difficulty in securing young men for entry jobs who understand job requirements.

The three special instructors were employed in local industries and taught in the Magnet Cove High School for one hour each day for a period of six weeks during the spring semester, 1965. The three units - blueprint interpretation, electricity and welding - were taught consecutively as a part of the agricultural mechanics course.

Most of the class instruction was conducted in the shop and laboratory but there were also lectures, discussions, supervised study, and visits to local industries. The instructors used texts and reference materials for reading and study. The teacher of vocational agriculture continued each class session of the special instructors course for an additional 50-minute period each day.

Various devices were used to evaluate the demonstration project. Two special consultants from the University of Arkansas found the course content and methods of instruction to be satisfactory. The students were interested and the instructors were satisfied with the progress of the students. Three officials of three large industries expressed approval of the manner in which the project was conducted and thought that the project would bring about some improvements in stability of employment.

The Kuder Preference Record Vocational Form, the GATB, the California Test of Mental Maturity, short form, school records, instructors' judgments and evaluation by students and school staff were also used to assist

in determining the effectiveness of the demonstration project. Most of the students were below average in scholastic achievement and the class contained two potential school dropouts. All students indicated that the special instructors' course had assisted them in the selection of a vocation, and one indicated that the course had caused him to remain in school.

Six of the students entered the Arkansas Vocational-Technical School at Pine Bluff. Two of them dropped out for personal reasons and four are presently enrolled. The number enrolled in post high school vocational schools for this one year is about the same as the total number for the previous five years. The results indicate that the special instructors' course has reduced school dropouts and has assisted students to make firm choices of occupations. Follow-up studies will need to be made to determine whether or not the length of the apprenticeship period will be reduced and greater stability of employment achieved. The results merit an extension of this type of teaching to other schools with similar problems.

EVALUATION OF THE EFFECTIVENESS OF USING SPECIALIZED INSTRUCTORS IN PROVIDING OCCUPATIONAL TRAINING FOR INDUSTRIAL JOBS FOR HIGH SCHOOL VOCATIONAL AGRICULTURE STUDENTS

CONTENTS

CHAPTER — Page

I. INTRODUCTION

Statement of The Problem 1
Objectives 3
Related Research and Background Information 4
Procedure 7
Plan of Study 9

II. THE MAGNET COVE COMMUNITY

Historical Development 11
The Population 12
Agriculture 13
Industry 15
The School 16

III. DESCRIPTION OF THE DEMONSTRATION PROJECT

Blueprint Interpretation 20
Electricity 23
Oxy-acetylene and Arc Welding 26
Teaching Methods 28

IV. EVALUATION OF DEMONSTRATION PROJECT

The Special Consultants 30
Statement by Officials in Industry 34
Evaluation of Students 35

V. SUMMARY AND CONCLUSIONS 47

APPENDIX

Statistical Tables 52

EVALUATION OF THE EFFECTIVENESS OF USING SPECIALIZED INSTRUCTORS IN PROVIDING OCCUPATIONAL TRAINING FOR INDUSTRIAL JOBS FOR HIGH SCHOOL VOCATIONAL AGRICULTURE STUDENTS

CHAPTER I

INTRODUCTION

The Vocational Education Act of 1963 with its increased authorizations of federal funds and emphases on inaugurating new programs and updating existing ones has directed nationwide attention to vocational education. The special provisions for research in the new act has resulted in a variety of research and demonstration projects designed to evaluate existing procedures and test out new ones in the light of new objectives.

The study reported in this monograph was initiated to determine the feasibility of using special instructors qualified in specific industrial vocations to supplement the agricultural mechanics instruction provided by the teacher of vocational agriculture at the Magnet Cove, Arkansas, High School. It is expected that the findings of this study will be applicable to a number of rural schools in the state with problems and resources similar to those in the Magnet Cove school district.

STATEMENT OF THE PROBLEM

The Magnet Cove High School is located in a highly industrialized rural area of Hot Spring County, Arkansas. More than 25 large manufacturing plants are located within a radius of 20 miles of the school. These

plants manufacture or process such commodities as aluminum, barium, automobile pistons, metal windows, brick, castings, wearing apparel, wood products, tools, and instruments. The Arkansas Power and Light Company operates a large hydroelectric power plant and a steam electric generating plant near Magnet Cove. A variety of minerals are mined in and near Magnet Cove.

The manufacturing industries located in Hot Spring County have the problem, common to many industries, of employing competent persons to work in occupations and jobs requiring industrial skills. Apprenticeship programs have been organized in a number of industrial occupations in some of the plants. Some high school graduates from the local schools have been employed and given on-the-job training in the industrial establishments.

The personnel officers of many of the industrial firms have pointed out some problems in the employment of high school graduates. It has been suggested that (1) some boys entered the training program who did not have sufficient knowledge in their field of employment to know whether or not they had the aptitude for the work, and (2) employers hired other boys and later learned that they were not suited to the type of work for which they were being trained.

In each of the above cases, the high school graduates became unemployed, either by their choice or that of the employers, at the end of the trial period. This situation was expensive to both the employers and the employees. The employers were obliged to employ other persons and enroll them in a training program, and the boys who failed to retain their jobs were in many cases discouraged and disillusioned and were

obliged to find work in other occupations.

The boys enrolled in the Magnet Cove High School receive four years of instruction in vocational agriculture. The course content of this instruction includes competencies in the production and marketing of farm enterprises common to the community and instruction in agricultural mechanics. The instruction in agricultural mechanics requires about one half of the class time devoted to the teaching of vocational agriculture. Agricultural mechanics knowledge and skills include such areas as woodwork, sheet metal work, farm machinery maintenance and repair, agricultural engineering, welding, electricity, gas motors, tool fitting, pipe work, concrete work and rope work. The instruction in these areas is elementary and only basic knowledge and skills are taught.

The demonstration project was designed as an attempt to correct the problems of employment referred to above by supplementing the course content in agricultural mechanics presently offered in the Magnet Cove High School. The supplementary knowledge and skills were taught by special instructors who were employed by the nearby industries and who were able to arrange their work schedule so that they could devote some time to teaching in the Magnet Cove High School.

OBJECTIVES

The demonstration project was designed to answer the following questions:

(1) Whether or not offering training in blueprint interpretation, electricity and oxy-acetylene and arc welding to vocational agriculture

students in the Magnet Cove High School would help them to determine the type of employment for which they were best suited.

(2) To see if such training would increase the stability of their employment.

(3) To determine whether or not such training would decrease the length of apprenticeship training needed.

(4) To see if offering such training would decrease the percentage of students who drop out of high school before completing requirements for graduation.

RELATED RESEARCH AND BACKGROUND INFORMATION

A review of the literature concerned with agricultural mechanics revealed that no specific studies had been made concerning the efficiency of using special instructors for day school classes in agricultural mechanics. Studies have been made in a number of states showing the broad categories of occupations that former students of vocational agriculture entered and the skills that they acquired in agricultural mechanics and used in the occupations in which they were employed.

A study of former vocational agriculture students in Arkansas showed that 72 percent of the former students who were available for employment upon leaving school entered occupations other than farming.[1] Most of these former students were employed as semi-skilled workers in manufacturing industries. A total of 82 percent of the students who entered non-farming

---

[1]Roberts, Roy W., Evaluation of the Effectiveness of Instruction in Agricultural Mechanics for Vocational Agriculture Students in Arkansas Who Enter Non-Farming Occupations. Monograph 67, University of Arkansas College of Education, Department of Vocational Teacher Education, Fayetteville, July, 1965.

occupations indicated that the skills they acquired in agricultural mechanics were useful in the occupation in which they were engaged. The former students indicated that skills acquired in such areas as machinery maintenance, woodwork, electricity, carpentry, and tool fitting were more frequently used in their present occupation. Skills acquired and least used included those in ropework, glazing, hot metal, and lettering and drawing. There was more difference in the number of skills acquired and used between students with two and three years of vocational agriculture than between students with three and four years of vocational agriculture.

About 32 percent of the former students indicated a need in their occupation for additional mechanical skills not acquired in the agricultural mechanics course. Among the more important additional skills needed were: machinery maintenance; reading blueprints; operation, care and repair of gas motors; and welding. Skills less frequently mentioned included carpentry, cold and hot metal, sheet metal, and concrete.

A study designed to determine the occupational status of former high school students in Virginia indicated that 72 percent of the representative sample of high school students in vocational agriculture completed high school and 28 percent left school before graduation. The data of the study indicated that 26 percent entered farming occupations, 11 percent entered occupations related to farming, and 25 percent entered occupations related to mechanical training received in schools and classes in vocational agriculture. Occupations involved in building construction, electricity, mechanics and machine shop were included in this latter

category. The percentage in each of the above categories was higher for students who had completed four years of vocational agriculture than for students who had completed only one year of vocational agriculture.[2]

A recent study of off-farm agricultural occupations in New York State identified 213 job titles in a selected sample of 16 school districts in which vocational agriculture was included in the secondary school curriculum. An estimate based on the data of the study indicated that 28,685 full time workers and 16,841 part time workers were employed in these areas in the school year 1963-64. The study indicated that employment opportunities in these occupations were increasing and curriculums in vocational agriculture should emphasize (1) agricultural business and agricultural mechanics for prospective workers in all occupational groupings; (2) plant science for prospective workers in crops, marketing and processing, forestry and soil conservation, wild life and recreation, ornamental horticulture, and agricultural service occupations; (3) animal science for prospective workers in livestock and dairy manufacturing and processing, and farm service occupations; and (4) forestry, conservation and outdoor recreation for prospective workers in these fields.[3]

---

[2]Virginia Vocational Agriculture Staff, A Follow-Up Study of Students of Vocational Agriculture in Virginia who Graduated or Dropped Out of School in 1954, 1957, and 1961. Mimeograph, State Department of Education, Richmond, September, 1963.

[3]Cushman, Harold R., Virgil E. Christensen, and Garry R. Rice, A Study of Off-Farm Agricultural Occupations. Agricultural Education Division, Rural Education Department, New York State College of Agriculture, Cornell University, Ithaca, 1965.

A New York study indicated that separate training programs for occupations did not appear feasible in most high schools, but that vocational agriculture can meet certain needs of employees in related occupations.[4]

These studies indicated that the proportion of former vocational agriculture students who entered farming occupations varied among the states, but in most states the percentages were somewhat discouraging. However, when the number who entered occupations related to agriculture and the number who entered occupations of a mechanical nature for which they received some knowledge and skills in agricultural mechanics were taken into account, the facts were less discouraging. The studies also indicated that students in vocational agriculture acquired many skills that were useful in the industrial occupations in which they were employed and that they believed that agricultural mechanics could and should provide them with additional skills in order that they might secure employment and progress in industrial occupations.

PROCEDURE

This study was experimental in nature and was designed to evaluate the effectiveness of giving specific training in the fields of blueprint interpretation, electricity, and oxy-acetylene and arc welding to twelfth grade boys enrolled in vocational agriculture. Training was given each school day for a period of six weeks in the unit being taught. Special instructors who had had practical experience in each of the three

---

[4]Tom, F. K. T., Charles W. Hill, and Kingsley L. Grune, Employment Opportunities in Certain Occupations Related to Farming in The Syracuse, New York, Economic Area, Mimeograph, New York State College of Agriculture, Cornell University, Rural Education Department, Ithaca, June 1961.

fields were employed to give the instruction. The instructors were men who were employed in their special field in industrial plants in the Magnet Cove area. The instruction given was designed to teach elementary skills and to give practice experience in each field involved.

The special instructors spent 50 minutes each school day for the six-weeks period with the class, and the teacher of vocational agriculture continued the instruction for an additional 50 minutes each day largely to provide time for students to acquire additional shop or laboratory experience.

The instructional units by the special instructors were scheduled as follows:

January 11 -- February 19	Blueprint interpretation
February 22 -- April 2	Electricity
April 5 -- May 17	Oxy-acetylene and arc welding

Some classwork involving study and discussion was included in each of the three units involved. However, most of the instruction was in shop or laboratory skills at which time students "learned by doing." Students were evaluated at the beginning and at the end of the period of instruction in order to check the effectiveness of the training. The principal investigator, who was the teacher of vocational agriculture, is making a study of each boy who received instruction. This study began May 17, 1965, at the end of the period of instruction and will continue until all the students are employed. It involves many interviews with each boy who received the training and with each employer or supervisor for whom he works. Such interviews were for the purpose of gathering information as to (1) his knowledge of subject matter, (2) his suitability

for the type of work for which he was employed, and (3) his stability of employment.

The program was administered by the Magnet Cove High School under the direction of the superintendent of schools, Lee Cassady, and the local board of education. Supervision was done by the local instructor of vocational agriculture, Glenn Teeter, who worked closely with the state director and state supervisors of vocational agriculture, State Department of Education, Little Rock, Arkansas. An advisory group consisting of one member of the Magnet Cove School Board, two representatives from industry (equal representation from employer and employee groups) and two members at large was appointed by the local superintendent of schools.

The facilities of the school shop were used by the special instructors. Limited funds were available for the purchase of shop supplies and some equipment. Additional items of equipment were obtained from some of the industries in the neighborhood.

PLAN OF STUDY

This introductory chapter is followed by Chapter II which is concerned with a description of the Magnet Cove community. Some facts about the history, topography, population, agriculture, industry and the school are included in the chapter. Chapter III indicates in more detail how the demonstration was conducted, including the course content of each of the three units of instruction, the supplies and equipment used, and the methods of teaching.

Chapter IV is concerned with an evaluation of the demonstration project. The evaluation was made by special consultants from the University

of Arkansas, by the principal investigator and special instructors of the project, by the staff of the Magnet Cove High School, and by some officials of local industries. A summary and conclusions are shown in Chapter V. This chapter also contains some recommendations for a continuation and expansion of projects of this nature. The appendix contains a number of statistical tables concerned with the data of the demonstration project.

CHAPTER II

THE MAGNET COVE COMMUNITY

Magnet Cove is an igneous area of about six square miles located in the northern part of Hot Spring County, Arkansas. This area contains a variety of minerals not found elsewhere in the state. One of the minerals is magnetite from which the Cove area derived its name. The Magnet Cove High School is located at Magnet, an unincorporated village on the eastern fringe of Magnet Cove about 15 miles east of Hot Springs, Arkansas. A discussion of some historical and economic aspects of this area is shown below.

HISTORICAL DEVELOPMENT

Magnet Cove has long been an historical center of interest. The first governor of the state of Arkansas, James Sevier Conway, who served as governor from 1836 to 1840, constructed a home in Magnet Cove in 1834 while serving as surveyor general of the territory of Arkansas. He noted the deviations of the needle of his surveyor's compass because of the presence of magnetite. G. W. Featherstonhaugh, a British geologist, visited Magnet Cove in 1834 and noted the fertile soil and the presence of a variety of minerals.[1] The early settlers of the area spoke of a warm pond that did not freeze during the winter months probably due to the

---

[1]Featherstonhaugh, G. W. Excursion Through the Slave States, Harper and Brothers, New York, 1844, p. 107.

volcanic origin of the area.

Rutile and brookite, sources of titanium, were found in Magnet Cove during the latter part of the nineteenth century and a small amount of titanium ore was mined in Magnet Cove in 1910. Barite was discovered in this area about 1900 and the mining of this ore began in 1939. The National Lead Company presently operates the largest barite mining operation in the United States in the Magnet Cove community. Joe W. Kimzey, a former state geologist and long time resident of Magnet Cove, discovered a special kind of garnet in Magnet Cove which was named Kimzeyite in honor of its discoverer.[2] The Union Carbide Company is arranging for the construction of a plant near Magnet Cove to extract vanadium, columbium, uranium, thorium, molybdenum, bismuth, titanium, and cobalt from ore mined in Magnet Cove and adjoining areas.

The first rural electric transmission line in the United States was constructed by the Arkansas Power and Light Company from the Remmel Dam hydroelectric plant, located in the Magnet Cove community, to Magnet and Prattsville. The teacher of vocational agriculture and members of the Magnet Cove Future Farmers of America assisted in the dedication of the line over a nation-wide radio hook-up in 1935.

THE POPULATION

Most of the population of the Magnet Cove community resides in Magnet Township. This township, like those of other rural areas, gained

---

[2]Key, Betty J. History of Magnet Cove and Butterfield, unpublished paper, Magnet, Arkansas

population between 1940 and 1950 but lost population between 1950 and 1960 (Appendix Table 1). The city of Malvern, located near Magnet Cove and in which many of the workers live who are employed in industries in and near Magnet Cove, gained population during each of the two census periods.

There were 6,900 workers in the labor force of Hot Spring County in 1960, and 86 percent of them resided in the county in which they worked. The median number of school years completed by males 25 years of age and older who resided in Hot Spring County was 8.9 years. The corresponding figure for females was 9.5 years. The median number of school years completed for the state was about the same as that of Hot Spring County.

The median income of families in Hot Spring County increased from $1,873 in 1950 to $3,881 in 1960 (Appendix Table 2). This is somewhat higher than the corresponding median for the state as a whole. The median income for families and related individuals in Malvern increased from $2,306 to $3,860 for this same period. The corresponding figures for Hot Spring County were $2,029 and $3,545. A total of 14 percent of the families in Hot Spring County as compared to 23 percent in the state had income of $1,000 or less per year in 1960.

AGRICULTURE

The fertile soils of Magnet Cove attracted farmers to the Magnet Cove community early in its history. Near the end of his term as governor, James S. Conway wrote a letter from his farm in Magnet Cove to the overseer of his plantation in Lafayette County in which he stated that "I have about 100 acres in corn (at Magnet Cove) which I think has yielded 45 bushels per acre. I can send you (from Magnet Cove) 35,000

pounds of pork."[3]

Cotton, wheat and other grains, and vegetables provided cash, food, and feed crops for many years. A flour mill and cotton gin were part of the agricultural industry of Magnet Cove for many years prior to the 1940's. When the vocational agriculture department was established in the Magnet Cove High School in 1930 about 80 of the 90 families in the Cove area were full-time farmers. The industrial development of the community has reduced the number of farm families in recent years. The number of farms in Hot Spring County decreased from 1539 in 1955 to 990 in 1960, but the average acreage increased from 90 to 116 acres during that time (Appendix Table 3). The cropland harvested decreased about 2,000 acres during the period, but the value of farm land and buildings per acre increased about $10 per acre. The number of family workers who were employed on farms in Hot Spring County decreased by about 859 during this period and the value of farm products sold increased more than $384,000 to a total of $1,586,000 in 1960.

Less than 10 per cent of the families who resided in the Magnet Cove area in 1965 obtained most of their income from farming. A number of the families engaged in part time farming. These farmers produced beef cattle and swine. Some grain crops for feed are raised and vegetables continue to be an important food crop for the families of Magnet Cove.

---

[3]Taylor, Orville W. Editor, A Letter from Governor James S. Conway to his Plantation Overseer, Arkansas Historical Quarterly, Volume XVIII, No. 1, spring 1959, Fayetteville, Arkansas, 1959, p. 91.

INDUSTRY

Industry came to Magnet Cove shortly before the beginning of World War II with the mining of barite by the Magnet Cove Barite Company. Prior to this, some mining had been done but not in quantities comparable to that of barite mining.

A rapid growth in industry occurred in Hot Spring and Garland Counties in the 1950's. There are presently (1965) more than 25 manufacturing establishments in a radius of 20 miles of the Magnet Cove community. These include the following companies:

American Metal Window Company
Acme Brick Company
Camper de Ville, Incorporated
Glenvale Products
Magnet Cove Barium Corporation
General Motors (Central Foundry Division)
National Lead Company (Bariod Sales Division)
Razorback Boat Company
Reynolds Metals Company
Hot Springs Brass Foundry Company
Permanent Casting Incorporated
Lake Catherine Footwear Incorporated
Alcoa
Curtis Mathis Company
Lashlee Steel Company
Arkadelphia Machine Works
National Gypsum Company
Hollywood Vassarette
Oberman Manufacturing Company
Ouachita Marine and Industrial Corporation
Ark Incorporated
Contractors Components Corporation
National Rejectors Incorporated
Norris Dispensers Incorporated
Weyland Machine Shop
United States Gage and Tool Corporation

It is estimated that these companies employed about 6,000 workers in 1965, many of whom were skilled craftsmen.

The Hot Spring County labor force decreased from about 8,500 workers in 1950 to 6,900 in 1960 (Appendix Table 4). The number of operative and kindred workers remained about the same, and there was a small increase in the craftsmen, foremen, and kindred workers, all of which was due to the increase in the number of female workers. The male craftsmen, foremen, operatives, and kindred workers constituted more than

one-half the male labor force of Hot Spring County in 1960.

The 1963 census of manufactures showed that Hot Spring County had 57 manufacturing plants, 13 with 20 or more employees. These plants employed 2,240 workers and had an annual payroll of almost $12,000,000. The value added by manufacturing by these plants was about $24,000,000 in 1963, as compared to $26,000,000 in 1958.

THE SCHOOL

The Magnet Cove public school district (Hot Spring County District No. 8) encompasses an area of about 45 square miles, most of which is in Magnet township in Hot Spring County (Figure 1). The school district was formed in 1930 by means of consolidating a number of smaller districts. The present school plant consists of a high school building, an elementary school building, a vocational agriculture building, a home economics cottage, a gymnasium and a lunch room all located at Magnet. An elementary school is located at Jones Mills.

The Magnet Cove public schools is a member of the North Central Association of Colleges and Secondary Schools. The school is organized on a 6-6 plan. There were 234 pupils enrolled in grades one through six, and 268 in grades seven through twelve, in 1965. The faculty consisted of 20 high school teachers and 11 elementary school teachers. About 95 percent of the pupils were transported to school by school buses.

The number of school age youth in the Magnet Cove school district decreased from 550 in 1958 to 516 in 1964 (Appendix Table 5). The assessed valuation of the district was about $11,300,000 in 1960 and $10,700,000 in 1964 (Apprendix Table 6). The industrial plants accounted

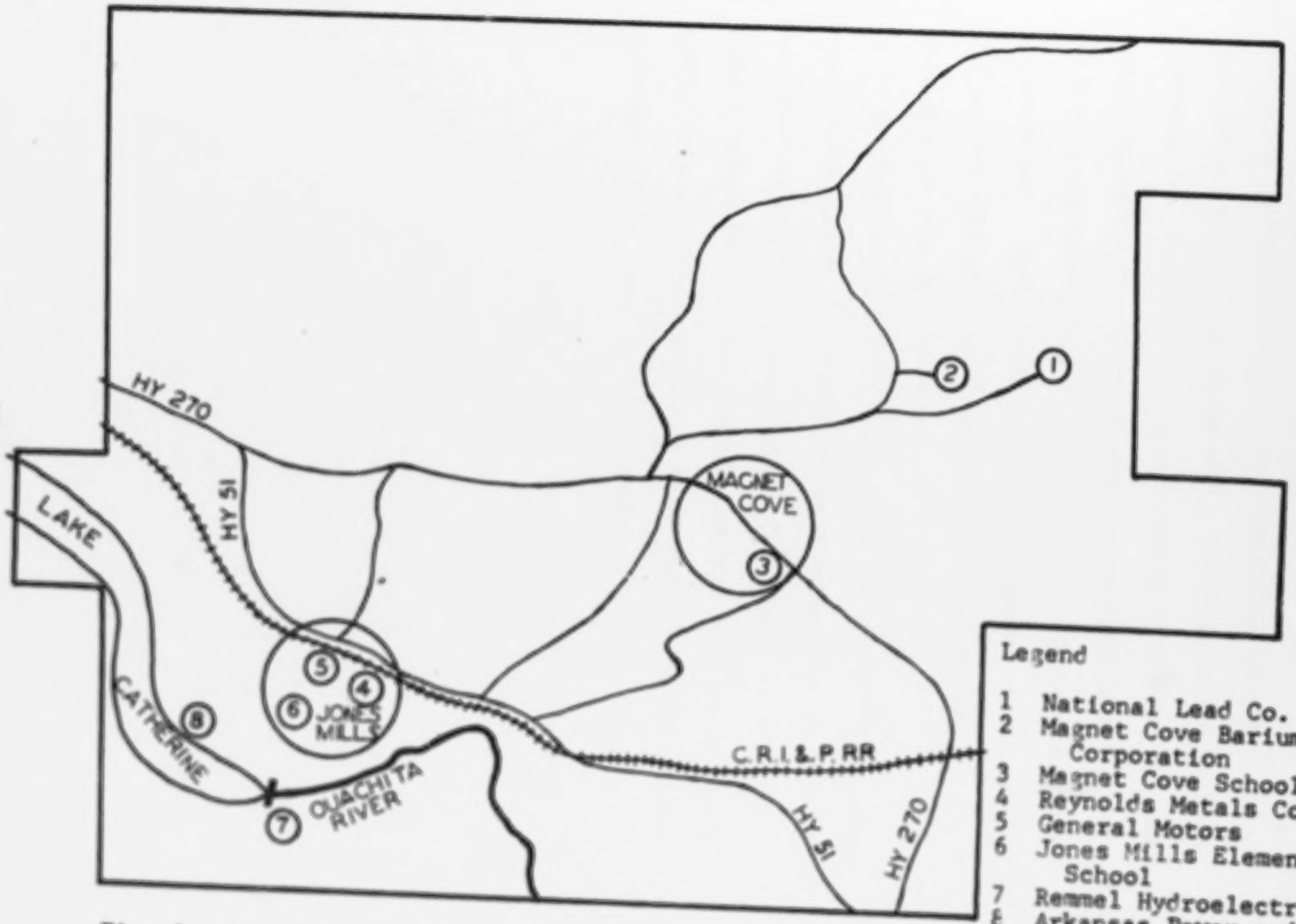

Fig. 1. The Magnet Cove Public School District (Hot Spring County District Number 8)

for about 90 percent of this assessed valuation.

The program of studies in the Magnet Cove High School includes curriculums in vocational agriculture, vocational homemaking, business education and college preparatory work. The vocational agriculture curriculum is a four-year curriculum including orientation and general agriculture in the first year, livestock enterprises in the second year, field crops and horticulture in the third year, and farm management in the fourth year. Agricultural mechanics is included in each of the four year courses. The planning of supervised farming programs and FFA activities are also included each year.

The first use of special instructors for vocational agriculture classes for adults in the state of Arkansas occurred in the Magnet Cove High School in 1960. This was a welding class organized to retrain a number of adults who had been laid-off from work from the industrial plants. This special course enabled these adults to acquire salable skills that could be used in the industries of the community.

CHAPTER III

DESCRIPTION OF THE DEMONSTRATION PROJECT

The demonstration project was designed to meet a specific need for 10 twelfth-grade boys who were enrolled in vocational agriculture in the Magnet Cove High School during the school year 1964-65. These students had had previous instruction in agricultural mechanics for the three years they were enrolled in vocational agriculture prior to the 1964-65 school year. The students had expressed little interest in continuing their education after high school graduation. One of the students dropped the special instructors' course during the first month of his enrollment but the remaining nine completed the course.

The special instructors in the three units selected were residents of the Magnet Cove community and patrons of the Magnet Cove Schools. They were interested in and participants of various activities designed to improve the community in which they resided. Since the school was the center of all community activities, the special instructors recognized an opportunity to improve the community by assisting in the school project. These special instructors also realized the problems of the employers and high school youth and saw in this demonstration project an opportunity to contribute to the solution of the problems of both the employers and the high school youth.

The school shop was not designed for the special instruction but did have some of the supplies and equipment needed for the project.

The Magnet Cove School Board approved of the project and agreed to purchase some of the supplies and equipment needed. The administrative officers of some of the industrial plants saw possibilities in the project and agreed to lend or donate some items of equipment. The instructor of vocational agriculture made some rearrangements of equipment and facilities to provide the necessary facilities for instruction.

The three units of subject matter - blueprint interpretation, electricity, and oxy-acetylene and arc welding - were selected with the aid of the school staff and prospective instructors. Student interest, availability of instructors, and nature and extent of equipment in the school shop were factors used in arriving at a decision concerning the demonstration project units. An outline of each of the special units together with some comments concerning the purposes, objectives, and equipment needed is shown on the following pages.

BLUEPRINT INTERPRETATION

The unit in blueprint interpretation was described as a brief presentation of the first principles of drafting, including familiarity with drawing instruments, materials and equipment, line languages, lettering, principles of projection, some detail of multiview projection, and a brief introduction to axonometric and orthographic projections.

The purposes of the unit were to give insight to, stimulate interest in, and introduce the students to the techniques of basic drafting, and give a sufficient understanding of drawings to enable the student to read and understand blueprints and be able to draw the simple models required in other areas of the course.

The equipment and materials needed included tables, drafting kits, drawing sets, erasers, pencils (mechanical), buff paper (8-1/2 x 11), pads (cross lined), leads, pencil pointers, and an assortment of models for visual aids. It was necessary for the vocational agriculture department to borrow the drawing tables from the Stamps High School because none were available in the department at the time the project started. A brief outline of the unit in blueprint interpretation together with the number of class periods of 100 minutes each, assigned to this unit is as follows:

Topics	Estimated Time (periods)
1. Introduction: A. What is drafting	2
2. Lettering: A. Types B. Numerals and fractions C. Aids D. Applications on the drawing	2
3. Instruments, materials and their uses: A. Drawing materials B. Care and use of equipment	2
4. Sketching: A. Sketch vertical and horizontal B. Sketch arcs and circles	2
5. Geometrical construction: A. Straight line figures B. Curved line figures C. Arcs and angles D. Tangent lines	2
6. Conventional lines: A. Alphabet of lines B. Hidden lines C. Show centers and axes by center lines D. Draw extension and dimension lines E. Make arrowheads	3

7.	Multiview projection: A. Draw single view drawing B. Draw two-view drawing C. Project a third view	3
8.	Sectional views: A. Draw full section B. Draw half section C. Draw broken section D. Draw a removed section	3
9.	Auxiliary views: A. Draw an auxiliary view B. Draw a partisal C. Draw an auxiliary section	3
10.	Axonometric projection: A. Make an isometric drawing B. Section an isometric drawing	4
11.	Oblique projection: A. Draw a cavilier drawing B. Draw a cabinet drawing C. Section an oblique drawing	4
	Total	30

The special instructor for this unit was Mr. Robert L. Ashcraft, an employee of the engineering department of Reynolds Metals Company. Mr. Ashcraft possessed a degree in industrial engineering and had had seven years of experience in drafting for Reynolds Metals Company. He was a resident of the Magnet Cove community. The Reynolds Metals Company made available at no cost to the Magnet Cove schools the time of Mr. Ashcraft for teaching the six weeks class in blueprint interpretation.

The special instructor in blueprint interpretation used the following basic text: French, Thomas E., and Svensen, Carl L., Machanical Drawing, McGraw-Hill Book Company, New York, 1962.

ELECTRICITY

The unit in electricity was described as a brief study of electrical terms such as the relationship of volts, amps, and watts; how to design simple wiring systems; practical experience in wiring; and a study of simple electric motors.

The purpose of the unit was to acquaint the student with the elementary skills in electricity. Knowledge of wire sizes, fusing, and simple wiring were involved. After completing the unit, a student should be able to do simple electrical jobs and have a good background for entering apprenticeship training as an electrician.

The equipment needed for the unit consisted of five electric motors, five demonstration boards, and five sets of electricians' tools. Numerous electrical fittings, including switches, outlets, receptacles and wire of various sizes were available. Additional items of equipment were secured from Reynolds Metals Company and some supplies were purchased by the Magnet Cove School Board.

A brief description of the outline in basic electricity together with the number of class periods of 100 minutes each assigned to the unit is as follows:

Topics	Estimated Time (periods)
1. Underwriters and codes	1
2. Basic principles and measurements A. Basic units of measurement, meaningful comparisons, simple math relationships B. Meters C. Computing cost of electricity D. Ohm's law E. Voltage drop and power loss F. Three-wire systems	2

3. Alternating current 2
   A. Comparison with direct current
   B. Frequency
   C. Voltage of alternating currents
   D. Phase and relationship to generators and application to motors
   E. Power factor
   F. Transformers

4. Basic devices and circuits 2
   A. Bulbs and sockets
   B. Circuits
      1. Series and parallel
      2. Switches
      3. Receptacles

5. Fuses and protection devices 2
   A. Types
   B. Circuit breakers

6. Wire and cables 2
   A. Measurement of
   B. Types and insulations

7. Proper wire size 2
   A. Relation to desirable voltage drop
   B. Calculating desirable voltage

8. Wire connection and joints 3
   A. Splicing
   B. Soldering
   C. Special connecting devices
   D. Wiring in conduit
   E. Wiring in cable

9)
10) Service entrance and circuits 2
11)
   A. Determination of the number of circuits
   B. Planning circuits
   C. Wire needs in circuity
   D. Service and circuit breakers
   E. Calculations to plan service requirements

12)
13) Service outlets 2
   A. Receptacles, light fixtures
   B. Determination of power demand
   C. Relation to room use

14. Lighting 2
    A. Units to measure
    B. Glare
    C. Fixture types
    D. Bulb types

15. Motors 2
    A. Rating and load capacity
    B. Types and applications
    C. Care of motors
    D. Transmission of motor power to machines
    E. Wiring for motors

16. Projects board 6
    Planning
    1. Service outlets
    2. Calculations of wire size, fusing, and circuits
    3. Installations
        a. Service box
        b. Fuse or circuit breaker
        c. Wiring boxes
        d. Switches
        e. Outlets
        f. Receptacles and fixtures
        g. Motor
        h. Conduit routing
        i. Wiring

Total 30

The special instructor for the unit in electricity was Mr. W. L. Wilson, an electrician for Reynolds Metals Company. Mr. Wilson had had various courses in residence and by correspondence in electricity, and 20 years of experience in electrical work. Mr. Wilson was a resident of the Magnet Cove community and a patron of the Magnet Cove school. Mr. Wilson was employed at the Reynolds Metals Company in one of the shifts scheduled at a time that did not conflict with the class period scheduled for basic electricity and agreed to teach the unit during his spare time at a small cost to the Magnet Cove School Board.

The special instructor in basic electricity used the following texts: Van Valkenburgh, Nooger and Neville, Inc., Basic Electricity, John F. Rider Publishing Company, New York, a division of Hayden Publishing Company.

OXY-ACETYLENE AND ARC WELDING

The unit in oxy-acetylene and arc welding was described as a brief presentation of both arc and oxy-acetylene welding, stressing the terminology of welding, knowledge and use of welding equipment, cutting, running beads, some knowledge of metal and the welding of a few basic positions of two thicknesses of mild steel plate and large pipe, and some work with cast iron. The students were assigned individually or in pairs to one type welder for job assignments and exchanged with students on another type welder before going to the next job assignment.

The purpose of the unit was to acquaint the student with the art of welding. The unit was extensive enough to develop some skill in simple welds, but limited to only a few job procedures. Some knowledge of metals was presented, but the students worked with mild steel and cast iron. This gave the student sufficient skills to do simple jobs in connection with a number of vocations and a good background for future training in welding.

The equipment needed for the unit consisted of four arc welders (complete), four oxy-acetylene welders (complete), heads, goggles, tanks, work tables, and grinder. The following supplies were provided: 1/8" rod for arc welding, flat steel 1/8" and 1/2", six inch pipe, 1/8" oxy-acetylene rods, hard surface material, soldering accessories, and carbon

rods.

A brief outline of the unit in welding with the number of class periods of 100 minutes each assigned to the unit is as follows:

Topics:

	Estimated Time (periods)
1. Equipment (both types): A. Terminology B. Regulation C. Care and cleaning	2
2. Use of equipment A. Adjustment and setting B. Striking of arc	3
3. Running a bead	6
4. Torch and cutting	3
5. Knowledge of metals A. Mild steel (thin and heavy plate) B. Cast iron C. Other	2
6. Positions of welds: A. Flat B. Vertical C. Horizontal D. Overhead	2
7. Job exercises: Exercises to be assigned to develop skill in weld positions discussed in part six of outline.	12
Total	30

The special instructor for this unit was Mr. Harold Verser, a tool and dye welder employed by General Motors. Mr. Verser had completed special courses in welding and had had 22 years of experience with the Magnet Cove Barium Corporation and General Motors Corporation. Mr. Verser was a resident of the Magnet Cove community and a member of the Magnet

Cove School Board. Mr. Verser was employed at the General Motors Company in one of the shifts scheduled at a time that did not conflict with the class period scheduled for welding, and agreed to teach the unit during his spare time at a small cost to the Magnet Cove School Board.

The special instructor in welding used the following texts: New Lessons in Arc Welding, The Lincoln Electric Company, Cleveland, and Welding and Cutting Manual, Linde Company, Division of Union Carbide, New York.

TEACHING METHODS

The classes with special instructors were scheduled in the afternoon of each school day beginning January 11, 1965 and ending May 17, 1965. This period of time was divided into three 6-weeks periods and one unit with a special instructor was scheduled for each of the six-weeks periods. The special instructors used class discussion and shop and laboratory practice in each unit. Reading assignments were made from the texts and other subject matter material. Students were given a number of written and oral tests by each instructor. The class discussion was conducted at such times as the instructor considered necessary.

The special instructors conducted the class during the first 50 minute period each school day. The first period was used either in formal class work and/or in shop or laboratory practice. The vocational agriculture instructor was responsible for supervising the students during the next 50 minutes. As a rule this period was a continuation of the shop and laboratory practice which was started by the special

instructor. Attendance during this second period was not required, but all students attended. Appropriate means were used to evaluate shop and laboratory practice. Projects were expected to meet specifications and be properly executed. Neatness and accuracy were stressed in blueprint interpretation. Laboratory activities in the electricity unit consisted primarily of various types of wiring projects, and most of the welding units consisted of demonstration and practice in oxy-acetylene and arc welding.

The students made three field trips to observe tradesmen working in the trades they were studying and in related areas. The students spent six hours each at the Reynolds Metals Company and the Arkansas Power and Light Company steam-electric plant at Jones Mills, Arkansas. One day was devoted to visiting the Arkansas Vocational-Technical School at Pine Bluff to learn about the educational opportunities provided at this school. The students observed trainees securing instruction in various trades at this school.

CHAPTER IV

EVALUATION OF DEMONSTRATION PROJECT

The problem of determining the extent to which the project accomplished the stated objectives was made difficult by the small number of students involved and the short duration of the project. Evaluative instruments and techniques consisted of the judgment of special consultants, tests of competency administered by the special instructors, interviews by the superintendent of schools and teachers of vocational agriculture, school records, interest and aptitude tests, evaluations by the students and by the school staff, and judgments made by officials of local industries. A discussion of the evaluations made by these individuals and secured from the techniques indicated is as follows.

THE SPECIAL CONSULTANTS

Two staff members from the College of Education, University of Arkansas were requested to serve as consultants to the special instructors project at Magnet Cove High School. These instructors, R. M. Roelfs, Professor of Education, and R. W. Roberts, Professor and Head of Vocational Teacher Education, visited the Magnet Cove school, Monday, April 19, 1965, observed the special project, and conferred with the students and staff of the project. The following comments concerning the organization, operation, and future possibilities of the project are made as a result of the visit.

The course content. The content of each of the three units consisted of classroom study, demonstration and shop practice. Basic texts were used for the classroom study. Each of the texts was considered suitable for use in the class in which it was used. The texts contained established principles and modern practices. The consultants were impressed by the fact that both the instructors and the students recognized the important of using text and reference books in shop courses. Students were given specific text book assignments and were tested at stated intervals. The tests on the whole were well organized and executed. There was some lack of neatness on some of the written work.

The shop facilities, equipment, and supplies appeared somewhat less than adequate. The agricultural shop was not designed for the specific course and this detracted from the appearance and efficiency of the shop work. Funds were not available for some needed equipment in electricity, and it was necessary to use equipment secured from industry. There is a need for more and better organized storage space for equipment and special work benches. It is suggested that in future courses drawing boards, drawing instruments and supplies be purchased to replace some of the borrowed equipment used. The welding equipment or supplies seemed adequate, but the limited space available prevented a more desirable arrangement of the equipment. A manufactured screen for shielding the arc welders would add to the utility of the welding area of the shop.

Student interests. The nine students enrolled were interested in the course and thought it worthwhile. This was evidenced by the fact that there were no absences from the course. Eight of the students indicated that they were planning to continue their vocational education at

the vocational-technical school at Pine Bluff. All apparently had selected specific courses they expected to follow. Arrangements were being made to have some one from the vocational technical school counsel with these students before they graduated from high school. There appeared to be a need for more counseling of students with special emphasis on vocational counseling for potential drop-outs. This could best be done by the school counselor rather than an individual from another school.

Teacher reaction. The instructors of the three units were enthusiastic about the project. The blueprint interpretation instructor, Mr. Leon Ashcraft, was well pleased with the quality of work and the progress of the students. He exhibited several plates completed by each student. The errors and outstanding features were marked by the instructor. He felt that more time should be allocated to drafting but that the results achieved in the short period of time were worthwhile.

Mr. W. L. Wilson, the instructor for the unit in electricity, was enthusiastic concerning the manner in which the objectives of the unit were realized. A wiring demonstration indicated that the students were acquiring basic skills in various types of wiring. The student response in the class in theory was satisfactory. There was some evidence of differences in their capacity to understand the theory of electrical resistance.

The instructor in welding gave demonstrations and supervised shop practice in arc and oxy-acetylene welding. This unit had been in operation about a week at the time of the consultants visit. The instructor was enthusiastic about the prospects for introducing students to welding techniques. All students were engaged in some welding activity and were

busy during the entire class period.

The teacher of vocational agriculture, Glenn Teeter, is especially pleased with the outcome of the course up to date. He has assumed responsibility for supervising the class work scheduled immediately following the class period conducted by each special instructor. Mr. Teeter is thoroughly familiar with the community and its people and he believes that the special project is serving a useful purpose in the community.

The superintendent of schools, Lee Cassady, has responsibility for the administration of the program and has suggested that it be continued as a permanent part of the program of studies of the Magnet Cove school. Mr. Cassady is especially pleased with the exploratory value of the program and is of the opinion that the students will gain an insight into the requirements for trade-technical occupations.

Efficiency of Instruction. The use of part-time instructors as compared to full time instructors has its advantages and disadvantages. The part-time instructors employed in the Magnet Cove project are far better qualified in the theory and practice of their respective trades that the average full-time industrial arts or vocational industrial education teacher. These part-time instructors are workers who are employed in the occupation they are teaching. They are familiar with the requirements of industry, the organization of their respective companies, labor management relationships and how to obtain and retain a job. They maintain the confidence of their students because they are currently employed.

They are presently enthusiastic about the special project and spend much more time on their teaching than would normally be expected

of a full time teacher equivalent. There is some question as to whether or not the zeal will continue through the years. Since this part-time teaching is scheduled during non-working hours for two instructors, both of whom could earn considerably more at other part-time work, there is some doubt that they would continue to teach in the school. The advantages far outweigh the disadvantages, and so long as the program is operated as at present, it should be continued.

STATEMENTS BY OFFICIALS IN INDUSTRY

Officials of three of the major industries located in the Magnet Cove community have been enthusiastic supporters of the special instructors' course since its beginning and have cooperated by giving the school some special equipment and by making it possible for the special instructors to teach the classes assigned. Three of those individuals made the following statements concerning the project.

Mr. James L. Dixon, assistant superintendent of the Arkansas Power and Light Company's hydroelectric plants at Remmel and Carpenter dams, stated that,

> "We followed this course very closely and are thoroughly familiar with it. The reason for our interest is that we are looking for trained or partially trained employees. Three years ago we gave job opening aptitude tests to five local youths. All five failed the test.
>
> We have talked with the boys taking the course, and we know the instructors are skilled in their trades. We think this would be a very valuable addition to the high school curriculum. This type of training will help the boys. Even those going to college will be helped."

Mr. Adrian Johnson, maintenance foreman, Reynolds Metals Company, made the following statements

"The recent project by Magnet Cove High School using practicing craftsmen for instructors in a trades class has been highly successful from the standpoint of the participating instructors and the students. The students, some of whom were potential drop-outs, developed a real interest in learning a trade. Perhaps one of the greatest contributing factors was the fact that the students knew the men teaching them were a success at their trade and they respected and admired them for their success. The instructors on the other hand took a real interest in the boys with whom they worked and perhaps will be able to help find employment for them after they finish trade school. Reynolds Metals Company has been proud to have a part in furnishing skilled craftsmen to instruct in this program."

Mr. W. A. Halbert, assistant superintendent, Baroid Division, National Lead Company authorized the following statement concerning the use of specialized instructors in high school:

"It is my opinion that bringing specialized instructors who are highly skilled in their trade into high school is very beneficial. These men must keep up with technological advances in their trade. They know the practical application of the skills required. They are able to give considerable guidance to young men looking for an occupation which will pay a good wage.

We come in contact with a great many high school graduates who have no skills, who want to work, but who have no idea as to the type of work for which they are qualified."

EVALUATION OF STUDENTS

Various techniques were used to evaluate the effect of the project on the individual student. The following tests were administered by members of the faculty of the Magnet Cove Schools: the California Test of Mental Maturity, Short Form, after the demonstration project was completed; the Kuder Preference Record, Vocational Form, in January, 1965, and again in September, 1965; and the subjective tests by the instructors of the special course (Appendix Table 7). The General Aptitude Test Battery (GATB) was administered by the State Employment Security Division, and some general information was obtained for each student from this test.

The school records supplied information concerning the academic proficiency of each student for the four year period he was in high school. Interviews were conducted throughout the duration of the project by the principal investigator, and some judgments were obtained from the employers and other school officials. A record of the performance of each of four students was obtained from the Arkansas Vocational-Technical School at Pine Bluff.

The information obtained indicated that the grade point average for the four years varied from 0 to 2.83 with a median of 1.63 (Appendix Table 8). The age of eight of the students was 17 years and one student was 16 years of age. The California test of Mental Maturity revealed a range in intelligence quotient from 95 to 113, with a median of 99.

All of the students lived with their parents at the time of the demonstration project. Seven of the fathers of the students were part time farmers and were employed in the local industries. The remaining two fathers of the students were employed locally but were not engaged in farming. A discussion of the impact of the various evaluative devices on each student is shown in the following statements.

Student A had a four-year composite grade point average in high school of 0.88 on a 4-point scale. His rank in a class of 39 senior class students was 32. He was a member of the school choir. He was unemployed during summer months after high school graduation.

The highest scores on the first Kuder Preference Record were in the areas of outdoors, artistic and music. The scores showed low interest in literary categories. The retest in September indicated a significant change of interest patterns in artistic and music categories. The [illegible]

showed below average scores on general learning ability but qualifying scores for mechanical repairing and welding.

The student indicated on a questionnaire in April, 1965, that he had previously planned to seek employment after high school graduation but that he had changed his plans and expected to enter the Arkansas Vocational-Technical School at Pine Bluff in September, 1965. He indicated that the special course "helped me make a decision on what type of work I was interested in. I would have gained more if it had been longer." This student made a final grade of C on the special course.

Student A entered the vocational-technical school in September, 1965, as previously planned. He is presently enrolled in a preemployment course in machine shop work. The teacher of vocational agriculture reported that he has had a number of interviews with the student and that the student stated that he was well pleased with the special instructors' course but that he wished that he had applied himself more diligently in mathematics in high school. His instructors at the vocational-technical school indicate that his progress is satisfactory.

Student B earned a four-year composite grade point average in high school of 1.63 on a 4-point scale. His rank in a class of 39 senior class students was 27. His lowest grade point was 0.25 received during his freshman year in high school.

This student scored high in the first Kuder Preference Record in the areas of outdoor, scientific, and machinical interests. He was low in music. The retest in September indicated no significant change in interest patterns. This student qualified for 23 vocational fields on the GATB. He met all the norms required for entry in machine work,

welding, and electricity, his first three choices.

The student indicated on a questionnaire that he had planned to enlist in the U. S. Navy after graduation but that he had changed his plans by April, 1965, and expected to enter the vocational-technical school at Pine Bluff. He indicated that the principal factor that influenced his decision to make the change was the realization that he needed to learn a trade. He indicated that his grades in high school subjects had improved since he began his course with special instructors and that this program had helped him to determine what trade he would like to enter at the vocational-technical school. He made a final grade of B in the special instructors' course.

This student entered the Arkansas Vocational-Technical School at Pine Bluff in September, 1965, as previously planned. He is presently enrolled in a preemployment course for machinists. He indicated that the special course not only helped him to select an occupation, but that "it has helped me in the vocational-technical school because a course in welding and a course in blueprint reading are required to finish the machine shop course at the vocational technical school."

The teacher of vocational agriculture reported that this student never faltered during each of the interviews in his determination to enter the vocational-technical school. His instructors at the vocational-technical school indicate that his progress is about average.

Student J earned a four-year composite grade point average in high school of 0.61 on a 4-point scale. His rank in a class of 39 senior class students was 33. He was employed during the summer after high school graduation at a boat dock on Lake Catherine.

This student was significantly high in the artistic and clerical areas and was low in social service as shown by the Kuder Preference Record administered in January, 1965. The retest in September indicated a preference for outdoor activity and no significant interest in clerical work. The various changes in preference indicated a lack of occupational maturity. This student qualified on the GATB for several work patterns including mechanical work, sales work or other public contact, structural crafts, electrical repairing, bench assembly and machine operation.

The student indicated on a questionnaire in April, 1965, that he planned to enroll in a trade school in September, 1965. He also indicated that his grades in high school had improved since midterm 1965 and the school records verified this statement. He indicated that the special instructors' course, "let me know what I would be best in and whether or not I would like this kind of work." His final grade for the course was C.

This student entered the vocational-technical school in September, 1965, as previously planned. He is presently enrolled in a preemployment course in machine shop work. The teacher of vocational agriculture reported that this student insisted at each interview that he intended to attend the vocational-technical school at Pine Bluff. His instructors at the vocational-technical school report that his progress is a little slow but the student more than makes up for this by his studiousness and attentiveness.

Student D earned a four-year composite grade point average of 1.78 on a 4-point scale. His rank in a class of 39 senior class students was 26. He was employed during the summer at a service station.

His Kuder Preference Record for January, 1965, indicated high interest in outdoor, mechanical and scientific areas. He was low in persuasive and musical categories. The retest in September, 1965, indicated little change in interest patterns. The GATB for this student showed him as average in learning ability and high in spatial aptitude and motor coordination. He met all the norms required for entry into training as a machinist. He also met norms for entry into other fields including electronics, clerical work, and public contact work.

This student indicated on a questionnaire in April, 1965, that he had previously planned to get a job or to enlist in the Armed Forces after high school graduation. He changed his plans after enrolling in the special instructors' course and planned to enter the Arkansas Vocational-Technical School at Pine Bluff in September, 1965. This student made a final grade of B on the special instructors' course. The student entered the vocational-technical school in September as planned. He enrolled in a preemployment course in machine shop work. However, after two weeks he dropped out of the vocational-technical school and returned home.

The teacher of vocational agriculture indicated that this student

The teacher of vocational agriculture indicated that this student
had difficulty during the summer in arriving at a choice of an occupation and that he was dissatisfied with the progress he was making at the vocational-technical school. He is presently employed in a service station and he stated that the "welding and electricity I learned in the special instructors' course helped me at the service station." The student has indicated that he expects to reenter the Arkansas Vocational-Technical School at the beginning of the spring semester, 1966.

Student E earned a four-year composite grade point average in high school of 2.20 on a 4-point scale and his rank in the senior class of 39 students was 21. His grade point during his senior year was 3.25, the highest of any of the students in the demonstration project. He scored significantly high in outdoor, mechanical and scientific interests on the Kuder Preference Record given in January, 1965. No retest was given to the student. This student showed up well in all fields of general aptitude on the GATB. He appeared qualified as a trainee for most of the trades and occupations.

The student indicated on a questionnaire that he had previously planned to go to Oregon during the summer, find employment and later enter the University of Oregon. At the time he filled out the questionnaire, he was undecided whether to enter a trade school or enlist in the U. S. Marines. His final grade for the special instructors' course was A.

This student enlisted in the U. S. Marines shortly after high school graduation. In a special letter to his teacher of vocational agriculture, he stated that the special instructors' course "helped me to choose my field of work in the military service. The course rounded out my education by providing trade training in three fields."

Student F earned a four-year composite grade point average of 2.83 on a 4-point scale. This composite score was the highest in the class of nine students in the project. His rank in the senior class of 39 students was 12. This student scored high in outdoor and mechanical interests on the Kuder Preference Record. His score was lower in music interests. The September retest showed a significant increase in social science interest. He is the type of individual who learns easily how

to get along with people. This student did exceptionally well on all categories in the GATB. His first choice of an occupation was drafting, and he was considerably above the norms required for entering training in this course.

This student indicated on the questionnaire that he had previously planned to get a job after high school graduation and get married. He later stated that if he could not get a job he would go to a trade school and then get married. He indicated that he had acquired some skills in the course that would be useful in any kind of work in which he might become employed. He also indicated that the special instructors' course "lightens the task of going to a desk in school all the school year." This student made a final grade of A in the special course.

The teacher of vocational agriculture indicated that this student was interviewed three times during the summer. In two of these interviews he stated that he planned to enroll in the Arkansas Vocational-Technical School in September, 1965. He did enroll and paid his fees but was married and accepted employment with the Arkansas Power and Light Company as an apprentice electrician. He indicated that the special instructors' course had assisted him in getting a job. His employer is satisfied with his work and the student believes that his time of apprenticeship may be reduced some as a result of his special course.

Student G earned a four-year composite grade point average in high school of 2.00 on a 4-point scale; he ranked 24 in a senior class of 39 students. He was employed as a common laborer at a sawmill throughout the summer.

The Kuder Preference Record indicated that this student was interested

in outdoor, mechanical and scientific areas. He tested low in literary and musical areas. A retest showed a significant increase in the mechanical and computation interests. This student was low in finger and manual dexterity, motor coordination, and vocabulary as revealed by the GATB. He was below the norms for his choice of training in welding because of his deficiencies in finger and manual dexterity. His norms were sufficiently high for training in minor electrical repairing, recording work, and public contact work.

The student indicated on the questionnaire that prior to January, 1965, he had made no previous plans concerning his activity after high school graduation. He indicated in April, 1965, that he planned to attend a trade school. He stated that the special instructors' course had assisted him to make the decision to enroll in the vocational-technical school. The student stated that "the course helped me a great deal by showing me that a person needs some kind of trade before he can get the things he needs in life." This student earned a grade of A in the special course.

This student entered the Arkansas Vocational-Technical School at Pine Bluff in September, 1965. He is presently enrolled in a preemployment course for machinists. The teacher of vocational agriculture reported that he had had four interviews with this student during the summer and in each interview he reaffirmed his decision to enroll in the vocational-technical school. His instructors at the vocational-technical school report that this student is doing above average work and appears to be real interested in machine shop work.

Student H earned a four-year composite grade point average in high school of 0.70. His averages were consistently low throughout the four

years he was in high school. His rank was 35 out of a class of 39 senior students.

The verification score for this student left reason for doubting the validity of his interest scores. The test confirmed this doubt since he scored below the fiftieth percentile in all areas. The GATB revealed that he was below average in vocabulary, numerical and clerical areas. He was qualified for training in minor structural crafts, material checking and some public contact work. He was below the norms required for his occupational choice of drafting.

The student indicated on the questionnaire that his plans in the fall of 1964 were to get some kind of work that did not require extra schooling. His plans in April, 1965, were to enroll in a trade school. He indicated that he had considered leaving school but that the special instructors' course had taught him the importance of "extra training and how easy it is to get." His final grade for the special course was C.

The teacher of vocational agriculture interviewed this student three times during the summer of 1965. In two of these interviews the student indicated that he would probably enroll in business college. In the third interview he had decided to attend the Arkansas Vocational-Technical School at Pine Bluff. This student entered the Arkansas Vocational-Technical School in September, 1965. He enrolled in a preemployment course in drafting but left the vocational school about a month after he had enrolled.

Student I did not complete the courses required for high school graduation. His grade point average for the ninth grade was -0.75 and it was 0.10 for his tenth grade work, on a 4-point scale.

This student did not take the Kuder Preference Record in January,

1965, but did take the test in September, 1965. His scores were high in mechanical, outdoor, and artistic interests. He was low in computation, literary and musical interests. The GATB indicated that this student was low in most fields requiring general ability or numerical aptitude, and noticeably slow in finger dexterity. He was average in manual dexterity. His suggested fields of training included bench assembly work, minor mechanical repairing, some structural crafts and manipulative machine operations.

This student indicated on the questionnaire that he had made no plans in September, 1964, relative to his employment or schooling after high school graduation. He had made plans by April, 1965, to attend the Arkansas Vocational-Technical School at Pine Bluff. This student indicated that as a result of the special instructors' course "I have learned enough to be a helper in each subject taught in the course." This student received a final grade of C in the course.

The teacher of vocational agriculture conferred with this student a number of times during the spring and summer, 1965. Before taking the special instructors' course the student stated that "he did not need a high school diploma to make a living." However, he is now enrolled in the Magnet Cove High School and is taking the courses he needs to be eligible to receive the high school diploma. His teachers in the Magnet Cove High School indicate that he is making satisfactory progress in his school work.

Summary. The school records indicated that most of the nine boys who had completed the special instructors' course had earned low grade-point averages in their four-year high school programs, and one had failed to complete the requirements for the high school diploma. Some of the

students improved their grade-point average during their senior year in high school.

All the students indicated that they had made some changes in their occupational plans after high school graduation, and the changes were attributed to the special instructors' courses. The Kuder Preference Record indicated some changes in occupational interests. Six of the nine boys who participated in the project enrolled in the Arkansas Vocational-Technical School in September, 1964. Only five students who graduated in vocational agriculture from the Magnet Cove High School enrolled in the Vocational-Technical School at Pine Bluff during the 5-year period, 1960-1964 (Appendix Table 9).

The scores made on the General Aptitude Test Battery indicated that five of the six students who enrolled in the Arkansas Vocational-Technical School at Pine Bluff met the norms required for their training courses.

Interviews by the teacher of vocational agriculture throughout the duration of the project indicated that the students were well pleased with the use of special instructors and their methods of instruction. All students indicated that they were impressed with the qualifications of the instructors and the fact that they were employed in the trade they were teaching. There was some indication that the special instructors' course had kept at least one student from leaving school and had caused one to return to school and seek a high school diploma. The instructors at the Arkansas Vocational-Technical School and the employer of the student who entered employment reported that the progress of the students was satisfactory.

CHAPTER V

SUMMARY AND CONCLUSIONS

This study was designed to evaluate the effectiveness of using special instructors for providing occupational training in industrial vocations for twelfth grade vocational agriculture students in the Magnet Cove High School. The objectives of the study were concerned with whether or not the special instructors' course would assist the students to make firm occupational choices, and would reduce the number of drop outs. It was contemplated that long range studies of the students would be made to determine the effect of the special course on the stability of employment of the students and the extent to which the training received would reduce the length of the apprenticeship training of the students who entered apprenticeable trades.

The Magnet Cove High School is located in an unincorporated village community in Magnet Township of Hot Spring County, Arkansas. A variety of minerals is present in the community, one of which is magnetite from which the name of the community was derived. For many years prior to World War II agriculture was the only industry in the community. The soil was fertile, and cotton, grain crops and vegetable crops were the cash crops of the community. In recent years a number of large mining and manufacturing industries have moved into the community. Most of the community labor force now is employed in these industries. Some of the families are engaged in part-time farming consisting mostly of beef cattle and swine production, and the youth of the community find little opportunity

for employment in agriculture.

Three special instructional units were operated as a demonstration project. These units, blueprint interpretation, electricity and welding, were scheduled consecutively for six weeks each during the spring semester, 1965. A special instructor, employed in the occupation he was teaching, was secured for each unit. The instructors were residents of the Magnet Cove community and were employed in plants located in the community. The three units were considered as an integral part of the agricultural mechanics course for fourth year students in vocational agriculture. The teacher of vocational agriculture supervised the demonstration project and assisted in the laboratory and shop work of each unit.

Ten students enrolled for the special course but one dropped out after about 10 hours of the first unit. All students were residents of the Magnet Cove community and all had attended the Magnet Cove High School for three years prior to the school year in which the project was conducted. Most of the students were below average in scholastic achievement as determined by their composite grade point averages. At the time the students had enrolled in the project one of the students planned to attend college and most of them were undecided about the kind of employment they would seek after high school graduation.

The nine students were taught by a special instructor for 50 minutes each day five days per week for the duration of the course. The instruction consisted of class work, supervised study, and shop or laboratory work. Assignments were made from text books and tests were given. The instructor of vocational agriculture continued each class daily for

an additional 30-minute period. This time was given to additional practice in the shop and laboratory. The students made two field trips to two industrial plants in the community and one trip to the Arkansas Vocational-Technical School at Pine Bluff, Arkansas.

The nine students completed the three units in a satisfactory manner. They were not absent from class during the entire time of the special course. One student indicated that he had thought of dropping out of school but did not do so because of his interest in the special course. All the students stated that they were impressed with the fact that the special instructors were employed in the occupation they were teaching. The students indicated that the course had assisted them in determining the kind of employment they sought after high school graduation.

One student who failed to graduate returned to school this year to complete his requirements for the high school diploma. Six students entered the Arkansas Vocational-Technical School at Pine Bluff in September, 1965. Two dropped out shortly thereafter. The four remaining were making satisfactory progress in December, 1965. Only five vocational agriculture students who graduated from the Magnet Cove High School had entered the Vocational-Technical School during the five year period, 1960 to 1964. During this period 70 students had graduated in vocational agriculture from the Magnet Cove High School. One student who entered employment as an apprentice indicated that his choice of the trade was influenced by his special course.

The officials of the major industries located in Magnet Cove were interested enough in the project to make available the time of one instructor and to provide some of the equipment. These officials also

indicated that the special course was a valuable addition to the school curriculum and would help the students to make firm choices and prepare for occupations of their choice. These findings were also borne out by the report of two special consultants and by the parents of the students enrolled in the demonstration project.

CONCLUSIONS

The demonstration project gave affirmative answers to two of the questions included in the objectives of the project. The special instructure course assisted all students enrolled to make a firm choice of an occupation and prevented one or two potential dropouts from leaving school. Follow-up studies will need to be made to determine whether the courses will add stability to employment and reduce the length of the apprenticeship training.

The use of special instructors to enrich the agricultural mechanics course in the vocational agriculture curriculum can and should be extended to most of the vocational agriculture departments of the state. The use of this technique will provide instructors qualified by training and experience for a variety of agricultural mechanics areas.

It is becoming increasingly difficult for teachers of vocational agriculture to maintain competencies needed in the variety of mechanical areas required in agricultural mechanics. This difficulty is due in part to the rapid changes that are occurring in mechanical technology and to the lack of time and opportunity for the teacher to acquire these competencies. Then too, the use of part-time teachers who are employed in the trade they are teaching adds to the confidence of the student

in the importance of the instruction. The special instructors with experience in industry can provide invaluable assistance to the student in his occupational choice, and give him confidence in his ability to make a wise choice.

The use of special instructors is not new. They have been used successfully for a number of years in classes in vocational agriculture for adults. The special instructors in these adult classes have provided specialized knowledge and advanced skills that teachers of vocational agriculture do not ordinarily possess. It is suggested that an extension of this technique to classes for day-school students will not only provide them with skills needed in agricultural occupations but with some competencies of an industrial nature. Such competencies are especially important to the 60 percent of the vocational agriculture students who will not enter farming or agriculturally related occupations. Many of these students will eventually enter industrial occupations. The knowledge, skills and attitudes acquired under these special instructors will better enable them to make wise choices and proper preparation for their chosen occupation in industry.

APPENDIX

Statistical Tables

TABLE 1. POPULATION OF MAGNET TOWNSHIP, MALVERN, AND HOT SPRING COUNTY, ARKANSAS, 1940 TO 1960

Place	Population for		
	1940	1950	1960
Magnet Township	600	1,917	1,456
Malvern	5,290	8,072	9,566
Remainder of county	13,056	12,191	10,871
Hot Spring County	18,946	22,180	21,893

Source: U. S. Department of Commerce, Bureau of the Census, Census of Population, Arkansas, 1960. Part 5, Arkansas, Washington, D. C.

TABLE 2. MEDIAN INCOME OF FAMILIES AND UNRELATED INDIVIDUALS, HOT SPRING COUNTY, ARKANSAS, AND STATE OF ARKANSAS, 1950 AND 1960.

Place	Median income of			
	Families		Families and unrelated individuals	
	1950	1960	1950	1960
State of Arkansas	$1,547	$3,184	$1,348	$2,629
Hot Spring County	1,873	3,881	2,029	3,545
Malvern	—*	4,484	2,306	3,860

Source: U. S. Department of Commerce, Bureau of the Census, Census of Population, Arkansas, 1960 and 1950, Washington, D. C.

*Not available

2

TABLE 3. AGRICULTURE IN HOT SPRING COUNTY, ARKANSAS, 1950, 1955 and 1960

Item	Statistics for		
	1950	1955	1960
Number of farms	1,621	1,539	990
Size of farm (acres)	91	90	116
Land in farms (acres)	147,959	139,333	115,266
Cropland harvested (acres)	23,591	12,522	10,650
Cropland for pasture (acres)	20,264	20,215	19,232
Value of land and buildings (dollars per acre)	56	73	83
Value of products harvested (dollars)	1,300,117	1,201,571	1,585,798
Family workers (number)	1,238	2,047	1,188
Hired workers (number)	77	22	42

Source: U. S. Department of Commerce, Bureau of the Census, Census of Agriculture, Arkansas, 1955, 1960, Washington, D. C.

TABLE 4. GAINFUL WORKERS IN VARIOUS OCCUPATIONS, HOT SPRING COUNTY, ARKANSAS 1950 AND 1960

	Gainful workers in labor force			
	1950		1960	
	Male	Female	Male	Female
Farmers and farm workers	882	26	294	29
Craftsmen, foremen and kindred workers	934	12	1,068	32
Operative and kindred workers	1,522	206	1,519	290
Laborers other than farm	975	12	671	12
Others	2,879	1,092	1,502	1,482
	7,192	1,348	5,054	1,845

Source: U. S. Department of Commerce, Bureau of the Census, Census of Population, Arkansas, 1950 and 1960, Washington, D. C.

TABLE 5. SCHOOL ENUMERATION, 1958-1964 MAGNET COVE, ARKANSAS SCHOOL DISTRICT, (HOT SPRING COUNTY, ARKANSAS, DISTRICT NUMBER 8)

Year	School emmeration
1958	550
1960	488
1962	525
1964	516

Source: School records, Magnet Cove Public Schools.

TABLE 6. ASSESSED VALUATION OF MAGNET COVE SCHOOL DISTRICT, 1960-1964, (HOT SPRING COUNTY, ARKANSAS, DISTRICT NUMBER 8)

Year	Assessed valuation
1960	$11,302,000
1961	11,219,000
1962	10,973,000
1963	10,779,000
1964	10,755,000

Source: School records, Magnet Cove Public Schools.

TABLE 7. AGE OF STUDENT, AND GRADES EARNED ON EACH UNIT, SPECIAL INSTRUCTORS' COURSE, MAGNET COVE HIGH SCHOOL, 1965, HOT SPRING COUNTY, ARKANSAS, DISTRICT NUMBER 8

Student	Age of Student	Grades earned in each unit			Composite of Course grade
		Blueprints	Electricity	Welding	
A	17	C	B	C	C
B	17	B	B	B	B
C	16	C	B	C	C
D	17	B	A	B	B
E	17	A	A	A	A
F	17	A	A	A	A
G	17	A	A	A	A
H	17	D	B	C	C
I	17	D	C	C	C

Source: School records, Magnet Cove Public School.

TABLE 8. GRADE POINT AVERAGES FOR STUDENTS ENROLLED IN THE SPECIAL INSTRUCTORS' COURSE, 1965, MAGNET COVE HIGH SCHOOL, HOT SPRING COUNTY, ARKANSAS, DISTRICT NUMBER 8

Student	Grade point average for				Four year average	Rank in class of 39*
	Ninth grade	Tenth grade	Eleventh grade	Twelfth grade		
A	-0.75	0	1.00	1.10	0.88	32
B	0.25	1.30	2.30	2.00	1.63	27
C	0.00	1.00	0.63	1.62	0.81	33
D	1.25	2.00	2.25	1.75	1.78	26
E	2.75	2.70	2.50	3.25	2.20	21
F	2.62	3.00	2.75	2.88	2.83	12
G	1.75	1.63	2.50	1.88	2.00	24
H	-0.50	0.12	1.10	0.33	0.70	35
I	-0.75	0.10	0	0	0	39

Source: School records, Magnet Cove Public Schools

*Grade point 4 is A, 3 is B, 2 is C, 0 is D, -2 is F

TABLE 9. PLACEMENT IN FIRST YEAR AFTER HIGH SCHOOL GRADUATION OF STUDENTS WHO COMPLETED FOUR YEARS OF VOCATIONAL AGRICULTURE AT MAGNET COVE HIGH SCHOOL FOR THE YEARS 1960 TO 1965, HOT SPRING COUNTY, ARKANSAS, DISTRICT NUMBER 8

Year of graduation	Number of graduates in Vocational Agriculture who						
	Entered College	Enlisted in Armed Forces	Entered common labor	Employment as an apprentice	Were unemployed	Entered Vocational School	Total
1960	4	6	2	0	5	1	18
1961	2	3	2	3	4	1	15
1962	2	3	3	5	1		14
1963	3	1	3	0	4	1	12
1964	4	1	3	1	0	2	11
Total	15	14	13	9	14	5	70
1965	0	1	1	1		6	9

Source: School records, Magnet Cove Public Schools.